

# PATENT ABSTRACTS OF JAPAN

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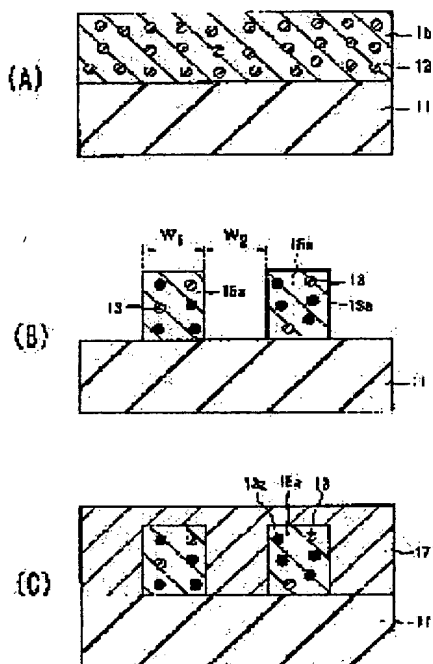
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## (54) PATTERN FORMING METHOD AND FORMATION OF PHOTOMASK FOR PHASE SHIFT METHOD



(57)Abstract:

PURPOSE: To provide the pattern forming method which makes it possible to obtain desired patterns by thickening once formed patterns with good versatility.

CONSTITUTION: A layer 15 of a positive type resist for i rays contg. an acid generating agent 13 is formed on a silicon substrate 11. The line and space patterns 15a of this layer 15 are obtd. The sample is subjected to irradiation with UV rays and heating to generate the acid 13a in the patterns 15a. A layer 17 of a resist of a chemical amplification type to be crosslinked by the effect of the acid is formed on this sample. The sample is heat-treated for

one minute at 100° C to diffuse the acid 13a in the patterns 15a into the resist layer 17 at the distances meeting the heat treatment conditions. The parts, where the acid

13a acts, of the resist layer 17 are crosslinked and, therefore, these parts are converted to a modified layer exhibiting insolubility in a developer. The resist layer 17 is removed with a developer. The desired patterns consisting of the patterns 15a and the denatured layer are obtd.

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